

CLAIMS

1. A high-voltage pulse generating circuit comprising:  
an inductor (22), a first semiconductor switch (24),  
5 and a second semiconductor switch (26) which are connected  
in series between opposite terminals of a DC power supply  
unit (16);

a diode (32) having a cathode terminal connected to a  
terminal (30) of said inductor (22) which has another  
10 terminal (28) connected to an anode terminal (A) of said  
first semiconductor switch (24), and an anode terminal  
connected to a gate terminal (G) of said first semiconductor  
switch (24);

said inductor (22) having a primary winding (42) and a  
15 secondary winding (44); and

a capacitor (46) connected in parallel to said primary  
winding (42).

2. A high-voltage pulse generating circuit comprising:  
20 an inductor (22), a first semiconductor switch (24),  
and a second semiconductor switch (26) which are connected  
in series between opposite terminals of a DC power supply  
unit (16);

a resistor (62) connected between a terminal of said  
25 inductor (22) which has another terminal (28) connected to  
an anode terminal (A) of said first semiconductor switch  
(24), and a gate terminal (G) of said first semiconductor

switch (24);

said inductor (22) having a primary winding (42) and a secondary winding (44); and

a capacitor (46) connected in parallel to said primary winding (42).

3. A high-voltage pulse generating circuit according to claim 1 or 2, wherein said inductor (22) stores induced energy when said first semiconductor switch (24) is rendered conductive by said second semiconductor switch (26) which is turned on, and said inductor (22) generates a high-voltage pulse when said first semiconductor switch (24) is turned off by said second semiconductor switch (26) which is turned off.

4. A high-voltage pulse generating circuit according to claim 3, wherein said capacitor (46) forms a path (52) for transferring thereinto a current flowing through said first semiconductor switch (24) after said second semiconductor switch (26) is turned off.

5. A high-voltage pulse generating circuit according to any one of claims 1 through 4, further comprising:

a diode (45) connected in parallel to said first semiconductor switch (24) and having a cathode terminal connected to said anode terminal (A) of said first semiconductor switch (24).

6. A high-voltage pulse generating circuit according to any one of claims 1 through 4, further comprising:

5 a diode (45) having an anode terminal connected between said DC power supply unit (16) and said second semiconductor switch (26) and a cathode terminal connected to said anode terminal (A) of said first semiconductor switch (24) or said other terminal (28) of said inductor (22).

10 7. A high-voltage pulse generating circuit according to any one of claims 1 through 6, wherein said first semiconductor switch (24) has a static induction thyristor.

15 8. A high-voltage pulse generating circuit according to any one of claims 1 through 7, wherein said second semiconductor switch (26) has a power metal-oxide semiconductor field-effect transistor.